

Name: _____

Half-life Worksheet

1. What is the half-life of a 100.0 g sample of nitrogen-16 that decays to 12.5 g of nitrogen-16 in 21.6 s?
2. All isotopes of technetium are radioactive, but they have widely varying half-lives. If an 800.0 g sample of technetium-99 decays to 100.0 g of technetium-99 in 639 000 y, what is its half-life?
3. A 208 g sample of sodium-24 decays to 13.0 g of sodium-24 within 60.0 h. What is the half-life of this radioactive isotope?
4. If 100.0 g of carbon-14 decays until only 25.0 g of carbon is left after 11 460 y, what is the half-life of carbon-14?
5. Thallium-208 has a half-life of 3.053 min. How long will it take for 120.0 g to decay to 7.50 g?
6. If the half-life of iodine-131 is 8.10 days, how long will it take a 50.00 g sample to decay to 6.25 g?
7. The half-life of hafnium-156 is 0.025 s. How long will it take a 560 g sample to decay to one-fourth its original mass?

8. Chromium-48 has a short half-life of 21.6 h. How long will it take 360.00 g of chromium-48 to decay to 11.25 g

9. Potassium-42 has a half-life of 12.4 hours. How much of an 848 g sample of potassium-42 will be left after 62.0 hours?

10. Carbon-14 has a half-life of 5730 y. How much of a 144 g sample of carbon-14 will remain after $1.719 \cdot 10^4$ y?

11. If the half-life of uranium-235 is $7.04 \cdot 10^8$ y and 12.5 g of uranium-235 remain after $2.82 \cdot 10^9$ y, how much of the radioactive isotope was in the original sample?